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MEMORANDUM FOR: Assistant Chief of Staff for Intelligence,
United States Army

SUBJECT: Lessons from Experience with Aerial
Surveillance and Target Acquisition in Vietnam

1. From 6 August 1964 until 27 August 1965 the under-
signed served as Chief of the Reconnaissance and Photo Intelligence
Division under the Assistant Chief of Staff, J2, U.S. Military
Assistance Command, Vietnam (see Annex A for a resume of
experience involving surveillance and target acquisition during this
period). The experience demonstrated that there were a number of
lessons to be learned that applied to three separate but related
subjects. These are as follows:

- a. Techniques of surveillance and targeting.
- b. Air-ground doctrine.
- c. Counterinsurgency doctrine.

(See Annex B for a discussion of the implications of these lessons on
Army organization and operating procedures.)

2. The undersigned would be pleased to assist in any
further discussion of these problems by the Army.

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3. Recommendations. It is recommended that:

- a. The Army initiate a review of air-ground doctrine with a view to incorporating changes suggested by the experience in Vietnam.
- b. The Army organize, equip, and train an aerial surveillance and target acquisition battalion along the lines summarized in Annex B.
- c. The Army incorporate the experience outlined in Annexes A and B in the Army counterinsurgency doctrine.

William A. Tidwell
Colonel USAR

Attachments:
Annexes A and B

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Resume of Experience with
Aerial Surveillance and Target Acquisition in Vietnam 1964 - 1965

1. Turning points in history are ~~not~~ always as clearly defined as the battle of Waterloo or the invasion of Normandy. For this reason it might be of use to later historians for us to postulate and describe the evidence that suggests that the 13th of November 1964 might well mark the beginning of the decline of "Wars of National Liberation." On that date ten A-1H fighter bombers belonging to the Vietnamese Air Force successfully attacked a small Viet Cong base a few miles to the west of Saigon. This was the first attack launched against guerrilla base areas in South Vietnam on the basis of newly developed targeting techniques which have subsequently been used with increasing effect to harass the Viet Cong in areas which they previously occupied with impunity.
2. Many scholars have discussed the interrelationship of war and politics. It is desirable to describe in greater detail certain military developments in South Vietnam in order that their full political significance may be understood.
3. It is well known that the United States Military Assistance Command under General William C. Westmoreland and the South

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Vietnamese military establishment have been fighting an enemy whose basic strategy is derived from the earlier theories of Mao Tse Tung with elaborations devised by General Giap and other Communist leaders of the war against the French in Indochina. According to their theory, small guerrilla forces base themselves in remote areas where terrain, vegetation, and the lack of communications make it difficult for conventional military forces to attack them. These base areas are used as sanctuaries as the guerrilla forces extend their operations into more populated areas, and as the guerrillas win support among the population, the bases are used for the collection of supplies and as training areas for newly recruited guerrilla units. As the guerrilla force increases in numbers, and as it establishes more reliable sources of weapons and ammunition, some of the guerrilla units are converted into small regular military units with professional training. If the guerrilla campaign continues successfully, the small regular units are pulled together to form larger regular units. The regular units may emerge from the base areas from time to time to engage in combat for training purposes as well as to supplement the harassment campaign of the guerrilla forces, but in general, great care is exercised to avoid committing these regular units to combat in circumstances that might result in the destruction of the unit. The campaign

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Annex A

of guerrilla harassment and the concurrent accretion of regular units continues until a regular military establishment has been created insufficient strength to enable it to emerge from its base areas and destroy the regular military forces of the Government. (At the end of Annex A are selected extracts from an article by Lin Piao, Minister of Defense of Communist China, published on 2 September 1965, which shows something of the current Communist attitude toward the war in Vietnam and the importance they place on bases in their theory of warfare.)

4. The Communists have followed this strategy in South Vietnam, beginning about 1960 with a small number of guerrilla forces held over from the days of the war against the French. The Viet Cong established themselves in several large remote areas including the notorious War Zones C and D and the Do Xa region. This guerrilla force was expanded rapidly on the basis of captured materiel and the guerrillas established themselves in a large number of additional base areas of varying sizes. At the same time, the North Vietnamese began to send parties of technicians and organizers and small quantities of critical equipment into South Vietnam either by sea or through the jungles of Laos. These cadres began to organize the regular "main force" Viet Cong units. At first in company strength and later in battalion strength, these units from time to time emerged from their base areas to conduct an ambush, to attack a hamlet, or to overrun

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some small Vietnamese army post. These operations were usually rehearsed in great detail and provided excellent training for the troops involved at relatively small risk. Later, as more regular troops were organized, military operations began to involve several battalions and a fairly sophisticated degree of staff coordination. All of these attacks added to the disrupting effect of the guerrilla campaign. The recipients of these attacks often could not tell whether they were being attacked by guerrilla or regular forces, and the effect was to increase the reputation of the guerrillas and to contribute to the idea that the guerrilla forces will be the inevitable victor in the struggle with the Government. This idea was reinforced by the examples of the Chinese and North Vietnamese successes based on similar strategy.

5. There are two glaring weaknesses in the Communist strategy. The first is that regular units engaged in combat against conventional forces require crew-served weapons and consume tremendous quantities of ammunition while in combat. This means that no matter how Spartan the regular force may be in other respects it must have a clearly established source for a reasonably homogeneous family of weapons and it must have sufficient ammunition on hand or in a well organized pipeline to support combat expenditures. The second weakness is the dependence of both guerrillas and main force units on

freedom from attack in their base areas. The problems of recruiting, organizing, and training effective units cannot be solved satisfactorily if the unit is under constant harassment. In the case of the Viet Cong guerrilla, this situation is compounded by his dependence upon locally produced food. A large proportion of the time of both guerrilla and main force units is devoted to growing food for their own consumption. This dependence on local food commits them to a geographic location for an extended period of time. If they are forced to move, they run the risk of losing the food in which they have already invested a considerable effort and which they must have to support their future operations.

6. These considerations led General Westmoreland in mid-1964 to order the development of a campaign of harassment directed against Viet Cong areas. This was no easy problem since the Viet Cong, being aware of the importance of their base areas, had gone to great lengths to conceal and camouflage their activities. Each military problem, however, has to be solved as it occurs. Just as the British learned to combat the German submarines in World War I and the United States Cavalry learned to fight the Plains Indians in the 1870s, it was necessary to learn how to solve this new military problem. This was finally done by combining old and established intelligence techniques

with new methods of reconnaissance to pinpoint the location of Viet Cong activity.

7. The basic principle of this new method of identifying targets is to use basic area coverage of conventional black and white photography as the focal point for organizing information from other sources in order that information which indicated current Viet Cong activity might lead the image interpreter to the photography most likely to reveal the location of the Viet Cong unit, camp, or base that could be attacked. The principal sources of information concerning current Viet Cong activity were:

- a. Airborne radio direction finding.
- b. Infrared reconnaissance.
- c. Reports of aircraft hit by enemy ground fire.
- d. Reports of visual contact with the Viet Cong

from aerial surveillance and ground force elements.

In all cases it is necessary to identify the location of the reported Viet Cong activity in the conventional black and white photography and interpret the photography to identify the point at which an attack by air strike or artillery would be most likely to hit the Viet Cong. This new method of target selection was first used on 13 November 1964. During the following months it was tried on other occasions and while not infallible

proved to be a great improvement over previous procedures. Sufficient confidence was established in the new methods to justify a great expansion in the number of aircraft used in attacks against the Viet Cong. By February 1965 large numbers of U. S. aircraft were being committed in this campaign in support of the limited resources of the Vietnamese Air Force. Many Viet Cong base areas were attacked for the first time since the beginning of the Viet Cong insurrection.

8. As in most strategic bombing campaigns, the effects of this program are cumulative, and for some time even the Viet Cong appeared to have been unaware that something new and different was happening to them. As time went by, however, it became more and more obvious that the campaign was achieving significant results. This was reflected first in the complaints of Viet Cong prisoners who expressed fear of air attack. The prisoners also began to complain of the lack of food and the numbers of prisoners themselves, as well as an increase in the number of defectors, began to reflect the increased pressure caused by the campaign. In most cases it is not possible to check the results of these air strikes immediately on the ground because they are conducted against targets in remote areas. In many cases, however, stories eventually filter out through the grapevine telling of the numbers of Viet Cong killed at such and such a place on such and such a date. These stories not only provide

useful information concerning the effects of the campaign but they also tarnish the myth of final Viet Cong victory. This in turn increases the difficulty of the Viet Cong in getting support from the populace.

9. In June 1965 the campaign was reinforced by the introduction of B-52 bombers. These airplanes, although designed for a different purpose, have a unique capability for laying down a heavy pattern of bombs, and this pattern bombing is an ideal method of attack against Viet Cong installations scattered in heavy jungle.

10. Throughout the campaign General Westmoreland and his staff have been constantly aware of the effects of this campaign on the uncommitted civilian population. Fortunately, the great majority of targets are, by Viet Cong choice, in remote areas where there is little civilian population. Extreme care has been used to see that civilian villages are not hit. Strikes are conducted under the control of Forward Air Controllers who fly in light aircraft close to the target to make sure that the strikes are placed on the target and not against peaceful villages. The press has mistakenly associated civilian casualties with this large scale campaign against the Viet Cong base areas. Unfortunately, since the beginning of the war civilians are and have been killed or injured by bombs from aircraft as well as by bullets and shells from rifles, machine guns, and mortars.

The great majority of these casualties occur in conjunction with fighting between units on the ground. Aircraft are often called in to provide close support to Vietnamese and U. S. forces engaged against the Viet Cong. Even though these attacks are directed by a Forward Air Controller, it is sometimes impossible to avoid causing civilian casualties in these circumstances.

11. The United States and Vietnamese Air Forces are conducting a strategic campaign against the Viet Cong that may well result in the complete disruption of the Viet Cong base system that has been developed over the past five years. If this is the result of the campaign, small groups of Viet Cong guerrillas can probably continue to operate, but in the long run it will probably be impossible for the Viet Cong to continue to maintain their Main Force units intact. This will have the effect of cutting off the logical progression from guerrilla unit to regular army envisaged in the doctrine of "Wars of National Liberation." Once that stage has been reached the counterinsurgency doctrine developed by the United States, involving political and economic action in conjunction with police and other local security measures, should eventually be able to restore South Vietnam to sufficient stability to enable the South Vietnamese people to make progress in developing their natural resources and restoring the damage caused by the Communists.

12. If this is the result of current U. S. efforts in Vietnam, we will have broken the myth of infallibility of the Mao technique. More important, however, we will have demonstrated the basic flaw in the theory. We will have demonstrated that guerrilla forces cannot establish themselves in invulnerable base areas and we will have developed techniques that will permit ourselves and our friends to hunt down the guerrillas if any should be so foolish as to attempt this type of warfare. It is interesting to speculate concerning the fate of history if this technique had been developed earlier. Castro's small forces in eastern Cuba, for example, might well have been wiped out in 1958 and the war in Malaya might well have ended much sooner.

On the basis of this analysis Comrade Mao Tse-tung formulated the strategy for a protracted war. China's war of resistance would be protracted and prolonged efforts would be needed to gradually weaken the enemy's forces and expand our own so that the enemy would change from being strong to being weak and we would change from being weak to being strong and accumulate sufficient strength finally to defeat him. Comrade Mao Tse-tung pointed out that with the change in the balance of forces between the enemy and ourselves the war of resistance would pass through three stages, namely, the strategic defensive, the strategic stalemate, and the strategic offensive. The protracted war was also a process of mobilizing, organizing, and arming the people. It was only by mobilizing all the people to fight a people's war that the war of resistance could be persevered in and the Japanese aggressors defeated.

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To rely on the peasants, build rural base areas, and use the countryside to encircle and finally capture the cities--such was the way to victory in the Chinese revolution.

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Since China's key cities have long been occupied by the powerful imperialists and their reactionary Chinese allies, it is imperative for the revolutionary ranks to turn the backward villages into advanced, consolidated base areas, into great military, political, economic, and cultural bastions of the revolution from which to fight their vicious enemies who are using the cities for attacks on the rural districts, and in this way gradually to achieve the complete victory of the revolution through protracted fighting; it is imperative for them to do so if they do not wish to compromise with imperialism and its lackeys but are determined to fight on, and if they intend to build up and temper their forces, and avoid decisive battles with a powerful enemy while their own strength is inadequate.

Experience in the period of the second revolutionary civil war showed that, when this strategic concept of Comrade Mao Tse-tung's was applied, there was an immense growth in the revolutionary forces and one Red base area after another was built. Conversely, when it was violated and the nonsense of the "left" opportunists was applied, the revolutionary forces suffered severe damage, with losses of nearly 100 percent in the cities and 90 percent in the rural areas.

During the war of resistance against Japan, the Japanese imperialist forces occupied many of China's big cities and the main lines of communication, but due to the shortage of troops they were unable to occupy the vast countryside, which remained the vulnerable sector of the enemy's rule. Consequently, the possibility of building rural base areas became even greater. Shortly after the beginning of the war of resistance, when the Japanese forces surged into China's hinterland and the Kuomintang forces crumbled and fled in one defeat after another, the Eighth Route and New Fourth armies led by our party followed the wise policy laid down by Comrade Mao Tse-tung and boldly drove into the areas behind the enemy lines in small contingents and established base areas throughout the countryside. During the eight years of the war, we established 19 anti-Japanese base areas in northern, central, and southern China. With the exception of the big cities and the main lines of communication, the vast territory in the enemy's rear was in the hands of the people.

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The base areas established by our party became the center of gravity in the Chinese people's struggle to resist Japan and save the country. Relying on these bases, our party expanded and strengthened the people's revolutionary forces, persevered in the protracted war, and eventually won the war of resistance against Japan.

* * * * *

Comrade Mao Tse-tung has provided a masterly summary of the strategy and tactics of people's war. You fight in your way and we fight in ours; we fight when we can win and move away when we can't.

In other words, you rely on modern weapons and we rely on highly conscious revolutionary people; you give full play to your superiority and we give full play to ours; you have your way of fighting and we have ours. When you want to fight us, we don't let you and you can't even find us. But when we want to fight you, we make sure that you can't get away and we hit you squarely on the chin and wipe you out.

However superior he may be in technical equipment and whatever tricks he may resort to, the enemy will find himself in the passive position of having to receive blows, and the initiative will always be in our hands.

* * * * *

U.S. imperialism relies solely on its nuclear weapons to intimidate people. But these weapons cannot save U.S. imperialism from its doom. Nuclear weapons cannot be used lightly.

U.S. imperialism has been condemned by the people of the whole world for its towering crime of dropping two atom bombs on Japan. If it uses nuclear weapons again, it will become isolated in the extreme. Moreover, the U.S. monopoly of nuclear weapons has long been broken; U.S. imperialism has these weapons, but others have them too. If it threatens other countries with nuclear weapons, U.S. imperialism will expose its own country to the same threat. For this reason, it will meet with strong opposition not only from the people elsewhere but also inevitably from the people in its own country. Even if U.S. imperialism brazenly uses nuclear weapons, it cannot conquer the people, who are indomitable.

However fully developed modern weapons and technical equipment may be and however complicated the methods of modern warfare, in the final analysis the outcome of a war will be decided by the sustained fighting of the ground forces, by the fighting at close quarters on battlefields, by the political consciousness of the men, by their courage and spirit of sacrifice. Here the weak points of U.S. imperialism will be completely laid bare, while the superiority of the revolutionary people will be brought into full play. The reactionary troops of U.S. imperialism cannot possibly be endowed with the courage and the spirit of sacrifice possessed by the revolutionary people. The spiritual atom bomb which the revolutionary people possess is a far more powerful and useful weapon than the physical atom bomb.

Vietnam is the most convincing current example of a victim of aggression defeating U.S. imperialism by a people's war. The United States has made South Vietnam a testing ground for the suppression of people's war. It has carried on this experiment for many years, and everybody can now see that the U.S. aggressors are unable to find a way of coping with people's war. On the other hand, the Vietnamese people have brought the power of people's war into full play in their struggle against the U.S. aggressors. The U.S. aggressors are in danger of being swamped in the people's war in Vietnam. They are deeply worried that their defeat in Vietnam will lead to a chain reaction. They are expanding the war in an attempt to save themselves from defeat. But the more they expand the war, the greater will be the chain reaction. The more they escalate the war, the heavier will be their fall and the more disastrous their defeat. The people in other parts of the world will see still more clearly that U.S. imperialism can be defeated, and that what the Vietnamese people can do, they can do too.

History has proved and will go on proving that people's war is the most effective weapon against U.S. imperialism and its lackeys. All revolutionary people will learn to wage people's war against U.S. imperialism and its lackeys. They will take up arms, learn to fight battles and become skilled in waging people war, though they have not done so before. U.S. imperialism, like a mad bull dashing from place to place, will finally be burned to ashes in the blazing fires of the people's wars it has provoked by its own actions.

Lessons from Experience with
Aerial Surveillance and Target Acquisition in Vietnam

I. PROBLEM

A. Several lessons may be learned from Army experience in Vietnam which may well affect doctrine, organization, and procedures for aerial surveillance and target acquisition. Most of the lessons stem from a need occurring in any war involving ground forces to find enemy targets that should form part of the commander's knowledge of the enemy situation and which should be considered by him for specific attack by:

1. Supporting Air;
2. Artillery;
3. Ground Operations.

B. This need has become increasingly important because technological developments have made it possible for the enemy to strike from greater distances than formerly and to disperse his forces for concealment and security to areas far beyond the cognizance of front line troops.

C. There are a large number of places in the world where the U.S. may conceivably be involved against a guerrilla enemy, and the guerrilla, by axiom, seeks to operate in those areas where it is most difficult for conventional forces to find him.

D. There is a need, therefore, to develop our techniques of reconnaissance to overcome increasing concealment and dispersal on the part of the enemy, particularly that which takes advantage of natural features such as terrain and vegetation.

II. THE ARMY'S ROLE

A. The Communists have made an intensive effort in recent years to extend knowledge of their guerrilla doctrine. There have been many reports of training schools for guerrilla leaders behind the Iron Curtain and in Cuba. There is considerable evidence that several hundred men from all over Latin America have been trained in guerrilla theory and techniques in Cuba.

B. Communist-influenced guerrilla or irregular forces have been encountered in the Congo, Dominican Republic, and various other places in Latin America and Africa. There is no way to predict political developments that might involve the U.S. directly in any of these situations, but each of them must be recognized as a potential situation in which the U.S. Army may be involved directly or indirectly. The manner of Army involvement conceivably might take various forms. For example:

1. The U.S. involvement might be limited to covert support of counter guerrilla forces. In such circumstance it would be necessary to provide aerial surveillance and target acquisition elements to operate

under civilian cover. It would be almost impossible in peacetime for any civilian organization to provide equipment and personnel, train them, and hold them in readiness for contingency use in the event of hostilities. In the face of a war of this nature, the Army's role would probably be to provide equipment, training, developed doctrine and techniques, and trained manpower in support of the organization primarily responsible for the conduct of covert support to the counter guerrilla forces (in Indonesia, for example).

2. It is possible that a situation might develop in which the U.S. support against guerrilla operations would be desired by the local government but not admitted publically because of political repercussions. In such a circumstance it might be desirable to deploy U.S. Army elements in uniform under ostensible cover of a training mission or some other legitimate military function but with the actual mission of conducting aerial surveillance and identifying guerrilla targets for attack by friendly forces.

3. There is also the possibility that U.S. Armed Forces might be involved in a fully overt war against guerrilla forces such as that currently under way

in Vietnam. In such a situation the Army would require aerial surveillance and target acquisition elements to use and complement the results of reconnaissance performed by the U.S. Air Force elements.

4. There is also the possibility that the U.S. may become involved in a war against conventional military forces. There again, it might be necessary for U.S. Army aerial surveillance and target acquisition elements to use and complement reconnaissance performed by the U.S. Air Force elements.

III. LESSONS FROM VIETNAM

A. On the basis of experience in Vietnam, it would appear that there is a defect in current doctrine concerning the employment of Tactical Air. According to current doctrine, the area deep behind enemy lines is the responsibility of Strategic Air and Tactical Air is to be employed to:

1. Gain air superiority over the battle area;
2. Isolate the battlefield; and
3. Provide close support to U.S. ground forces.

This statement of the responsibilities of Tactical Air sounds comprehensive, but let us examine its implementation in greater detail.

B. In carrying out the mission of gaining air superiority, part of the Tactical Air Force would be required for employment in

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an air-to-air role. In addition, however, strikes against air bases and related supporting facilities would be appropriate. These strikes would probably take place behind or in the rear portion of the battle area. It would appear to be appropriate for the air component to have the primary responsibility for selecting the targets to support this particular activity.

C. In carrying out its mission to isolate the battlefield (i. e., interdiction), Tactical Air would be used primarily against lines of communication and against targets of opportunity that might be discovered as a result of armed reconnaissance. By the nature of the mission a large proportion of the targets attacked would tend to be toward the rear of the enemy's combat zone. Again it would appear to be appropriate for targeting for this mission to be performed by the Air Force, so long as the interdiction program were coordinated with the plans of the ground force commander.

D. The targets struck in the course of carrying out the close support mission would tend to be near the Forward Edge of the Battle Area. By its nature the strikes in this last category are usually delivered as the result of the operations of a request system originating with troops on the ground. Strikes are usually delivered against targets that can be seen from the front lines or identified by short range reconnaissance assets under the direct control of the ground force commander in contact with the enemy. There is

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Enemy Territory

Friendly Territory

Strategic Campaign

Tactical-Air Superiority

Tactical-Isolation of Battlefield

Tactical-Close Support

Enemy

Air Bases, etc.

L. O. C., etc.

Enemy installations, supplies, and troops not engaged against friendly forces

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Area in which the Strategic battlefield campaign should be conducted.

Enemy troops engaged against friendly forces

Air Force does targeting for Strategic Air Campaign and for Air Superiority and Interdiction missions.

Army should do targeting for close support and strategic battlefield campaigns.

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relatively little opportunity for preplanned strikes, and there is normally no staff element in either the Army or Air Force with adequate analytical and imagery interpretation resources to systematically develop targets that are in the enemy's combat zone but outside of immediate contact with troops at the Forward Edge of the Battle Area.

E. If the missions described above are plotted out schematically, it becomes clear that there is a gap in responsibility between the interdiction strikes placed at the rear of the enemy's combat zone and the close support missions placed at the front of the enemy's combat zone. Furthermore, no single agency has clear responsibility for the conduct of what might be called a strategic battlefield campaign employing air strikes, Army missiles, and artillery in an integrated program of destruction or harassment aimed at enemy forces that may be in the combat zone but which are not involved in direct combat with U.S. ground force elements.

F. In Vietnam this problem was complicated by the basic ground rules for the clearance of air and artillery strikes, by the need to persuade rather than command allied ground force commanders to authorize strikes against enemy targets, and by the lack of any clear-cut responsibility for developing targets for pre-planned strikes. The problem was solved in part initially by the creation of an ad hoc joint organization known as the MACV J2 Target Research

and Analysis Center. This organization successfully applied both new and already established techniques employing aerial photography, radio direction finding, infrared reconnaissance, and collateral information to identify a large number of possible Viet Cong targets. A large number of these possible targets were attacked by either air or artillery and a few were attacked by ground operations. The capabilities of the organization, however, were never fully integrated into the Tactical Air Support System because of the apparent defect in doctrine which caused that system to be focused almost entirely on the close support mission, with the result that it was organized to respond primarily to requests originating with front line troops.

G. On the basis of the experience cited above, it would appear desirable to have established doctrine reflect the existence of a requirement for a Strategic Battlefield mission in addition to those already established. It would also appear to be appropriate to assign primary responsibility to ground force elements for developing the targets to be attacked in accordance with this campaign. It would also appear logical to assign to the ground force commander the responsibility for deciding the means to be employed in attacking a given target and empower him to direct air attacks against those targets deemed by him to be most appropriate to be attacked by Tactical Air.

H. In addition to the organizational experience cited above, the U.S. Military Assistance Command, Vietnam also made some technical developments in the use of reconnaissance. It was found, for example, that if the results of infrared reconnaissance were plotted onto existing recent conventional photography of an area, it then became possible to interpret and derive additional significance from the conventional photography. Results of airborne radio direction finding were also handled in this manner. As a result of this experience, MACV developed a technique for conducting the various forms of reconnaissance so as to concentrate on an area believed to be occupied by the Viet Cong so that image interpreters and target analysis personnel would be able to establish patterns of Viet Cong activity and have a maximum opportunity to identify possible strike targets in the conventional photography. MACV was able to organize this reconnaissance so that infrared missions could be flown in the early evening and the results compared with existing black and white photography, possible targets identified, target mosaics prepared and annotated, and the necessary copies of the target mosaics gotten into the hands of the appropriate ground force elements in time to permit an air strike to be conducted at daylight the following morning. MACV was also able to work out a method by which side-looking radar aircraft could be integrated into a quick-reaction strike capability. This involved training the radar operator to interpret geographic

coordinates from the radar film record while in the aircraft. The result of all of these technical developments was to make it possible for MACV to conduct a heavy campaign of harassment directed against Viet Cong in the general battle area but not directly engaged against friendly troops.

IV. THE NEED FOR A NEW ORGANIZATION

If, as stated above, U.S. military doctrine should provide for the conduct of a strategic battlefield mission, there also exists a requirement for a reconnaissance and targeting organization to support such a campaign. To be effective the reconnaissance program must be conducted in such a way that it can identify possible targets and put the necessary information and target materials into the hands of those responsible for conducting operations in sufficient time to enable the targets to be struck before they can move. This means that a number of complicated activities must mesh together with absolute precision. For this reason it is essential that there be created a single organization having under its control all of the elements required to permit it to carry out its mission of identifying possible enemy targets and providing the necessary information and targeting materials to action elements in the most timely manner possible.

V. TECHNICAL CONSIDERATIONS

A. The first consideration in developing an organization for targeting is the requirement for speed. A targeting operation

against fixed installations can afford to move at a measured speed and with factory-like efficiency. On the other hand, if the targeting operation is being aimed against troops and mobile equipment, the system must operate with a speed that will permit the necessary attack to be launched in time to catch the troops or mobile forces in the locations at which they have been discovered. Such speed may well require a redundancy of equipment and personnel, and procedures that are not efficient in an economic sense. For example, there must be adequate photo processing equipment to process reconnaissance film immediately without having to wait in the backlog that would be required if the photo processing machine were to be used to its full capacity. In other words, if two or more reconnaissance aircraft delivered their film simultaneously, the film should be processed simultaneously and not stacked up in some priority sequence to be processed by a single machine. In general, maximum efficiency in the use of machinery is inherently incapable of delivering maximum speed in a targeting operation.

B. One of the critical decisions that has to be made at an early point in planning a targeting operation is whether the image interpreters will work from prints or transparencies. This decision is influenced by the need for target materials. If these are required, it will be necessary for the analyst to work on the prints that can be used immediately as target materials or provided with the immediately

available laboratory and reproduction facilities to make it possible to produce target materials from transparencies within a matter of minutes. In general, the level of training and experience of the average image interpreter is not good enough at this point in time to enable him to work satisfactorily from a negative. This is further complicated by the fact that targeting may well involve terrain and cultures not familiar to the image interpreter and of such complexity that months of experience would be required before he would learn them thoroughly. In such a circumstance the interpreter should be given all assistance possible. It seems fairly clear from the experience of the past few years in the U.S. intelligence community that a duplicate positive can give the image interpreter the best chance to perform sound interpretation. It would seem appropriate, therefore, to plan the targeting system around the use of duplicate positives as the primary medium for image interpretation. This in turn will have direct consequences in the equipment and procedures acquired for the rapid production of target materials.

C. If the enemy is conscious of the need for concealment and is well trained in camouflage and concealment techniques, it will be difficult for the targeting operation to operate on the assumption that targets can be selected by direct identification of enemy activity. (i. e., one cannot "acquire" a target. One must perform an elaborate analysis to deduce its probable location). The more difficult it is to

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see the enemy directly, the more important it is to be able to deduce his location by indirect methods. In general, these indirect methods fall into two categories, namely, the use of technical sensors and the detection of changes in two or more sets of photography that indicate enemy activity. Both of these indirect methods require that the image interpreter have on hand recent high quality photographic coverage of the areas in which he is looking for enemy activity. This requirement means that the reconnaissance system must be capable of generating large quantities of area coverage photography, probably on a continuous basis. This area coverage photography provides the focal point for all of the other information that can be brought to bear to detect enemy activity and select targets that can be recommended for strike. This is the opposite of the conventional reconnaissance technique that begins with the generally known target location and requires relatively small area coverage of the known target and its immediately surrounding territory. The basic area coverage photography can be used in the indirect identification of targets in the following ways:

1. Visual reconnaissance can report probable enemy activity at a particular location. The most recent area coverage available can then be studied immediately to see if the report of enemy activity will permit the interpreter to put new meaning into the things that he sees in the photography.

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2. Current ad hoc reconnaissance photography can be compared with the most recent basic coverage of the same area to see if recent changes in terrain, vegetation, cultural features, etc., indicate probable enemy activity.

3. The results of radio direction finding can be plotted on the most recent area coverage available and the photography interpreted to see if the presence of an enemy radio at a given location can assist the image interpreter to identify the probable location of the unit supported by the radio.

4. The results of infrared reconnaissance can be plotted on basic area coverage to permit the interpreter to discount those infrared returns for which a peaceful explanation is evident in the photography, eliminate false returns, and to identify those returns which may be significant as indicating current enemy activity.

5. The results of reconnaissance by side-looking radar, particularly those returns detected by the Moving Target Indicator, can be plotted on the basic area coverage to assist the image interpreter in deriving new meaning from the photography.

6. The area coverage also provides a locational background against which collateral information from

clandestine agents, prisoner interrogation, and other human sources can be indexed to assist the interpreter in identifying probable enemy activity in the photography.

In theory it would be possible for the image interpreter to detect some probable enemy targets in spite of camouflage and concealment by immediate thorough scan of all area coverage photography obtained. In practice, however, the volume of such photography is normally far in excess of that which can be handled by the numbers of trained image interpreters likely to be available. While it is highly desirable to scan all such photography, the best results can be obtained when other information indicating current enemy activity can be used to lead the image interpreter to the specific photography that requires intensive analysis.

D. The reconnaissance and targeting concept outlined above contains certain implicit requirements for equipment which must be taken into consideration in drawing up the TO&E for the unit implementing the concept. The main considerations are:

1. Aircraft. It is necessary to have reconnaissance aircraft capable of providing large quantities of photography covering broad areas on the ground. The photography required would generally fall between the scales of 1:3,000 and 1:5,000. A large format for the photography is desirable to simplify the problem of making target materials.

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9x18 format is probably the best, but 9x9 would be satisfactory. In addition, there should be a capability to take high quality stereo photography of selected smaller areas on an ad hoc basis. A smaller format is satisfactory for this purpose, but the larger format would do just as well if adequate stereo quality can be obtained. At the present time the aircraft most likely to perform the broad basic coverage mission are in the inventory of the U.S. Air Force. Suitable aircraft performing the ad hoc reconnaissance mission are also in the Air Force inventory, but the Army Mohawk can also perform this mission and other aircraft within the weight limitations of Army aircraft could probably be developed to perform this role. The most suitable aircraft for the direction finding role appear to be the Army L-20 and L-23. Other aircraft could probably be configured to perform the DF mission, but the smaller aircraft in the U.S. Army inventory seem to be the most suitable. Light observation of the O-1 type are also necessary to perform visual surveillance. Most of the Army aircraft mentioned above could perform the courier role required to deliver target materials and photographic prints to ground commanders and forward air controllers.

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interruption by the requirement for immediate scan of new photography. There should also be adequate enlargers, copy cameras, and photo reproduction equipment to permit the rapid production of target materials in substantial volume.

4. Communications. In addition to the capability to deliver target materials, the unit must have its own secure communications to provide immediate contact with troop commanders and forward air controllers, since much of the information derived from the analysis of photography can be reported in textual format. Secure communications are also required in order that the unit may receive all available intelligence from non-reconnaissance sources in order that the unit may be fully informed of the intelligence situation and may conduct its search for targets in the light of the best information available concerning enemy activity.

E. Although the unit performing target identification and analysis must have all of the collateral intelligence available to assist it in its task, the unit will also require additional intelligence support and guidance that it cannot perform for itself. Presumably the intelligence component of the next superior headquarters would have

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available to it a more fully rounded understanding of the intelligence situation. There should be a close working relationship between the organization performing the targeting function and its superior headquarters in order that the targeting organization can focus on those areas of most immediate importance to the current military situation and the operational plans of the commander. In addition, there is likely to be intelligence of such sensitivity that it cannot be made available directly to the targeting organization. The higher headquarters must assume the responsibility of integrating such sensitive intelligence and providing guidance to the targeting organization in the light of the resulting knowledge.

F. Inasmuch as the identification of possible enemy targets involves a number of highly technical considerations not understood by the average field commander or staff officer, it is important that the targeting organization have adequate competent liaison personnel to maintain contact with field headquarters and strike elements being supported in order to explain the rationale behind the selection of specific targets and to assist the supported units in preparing plans for attacks against the targets identified.

VI. ARMY AVIATION BATTALION, AERIAL SURVEILLANCE
AND TARGET ACQUISITION (ASTA)

A. It is proposed that the Army provide for an integration of aerial surveillance and the analysis necessary to identify concealed

targets by organizing an Army Aviation Battalion, Aerial Surveillance and Target Acquisition (ASTA) in accordance with the following mission:

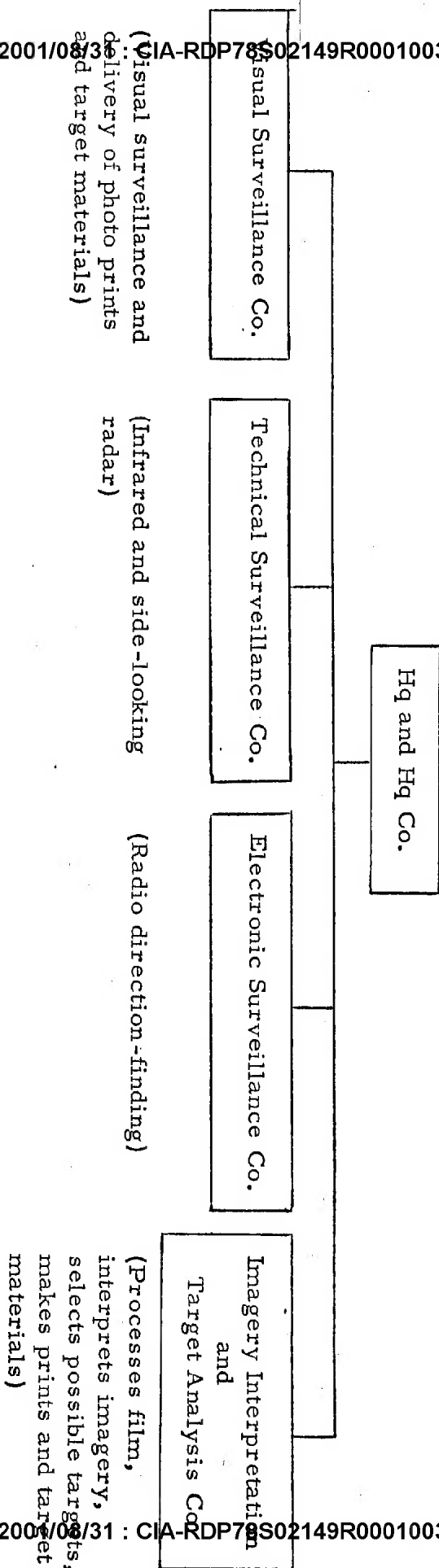
To support the ground force commander by identifying targets for attack by air strike, artillery, or ground forces in the following situations:

- a. As the sole aerial surveillance element in operations against guerrilla or other irregular forces;
- b. As the U.S. Army aerial surveillance element cooperating with complementary USAF reconnaissance elements in operations against guerrilla or other irregular forces;
- c. As a U.S. Army aerial surveillance element cooperating with complementary U.S. Army surveillance and USAF reconnaissance elements in conventional military operations.

B. It is proposed that the ASTA battalion be organized as shown on the attached following chart:

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Army Aviation Battalion, Aerial Surveillance and Target Acquisition (ASTA)



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C. The ASTA battalion should be under the operational control of the intelligence division of the principal headquarters responsible for the conduct of operations in the combat zone. This would permit the commander to insure proper coordination between intelligence and operations within his own staff. It would also fix responsibility for the conduct of an aggressive intelligence program leading to the identification of enemy targets, and would provide a means by which the commander could influence the course of the war above and beyond the influence that could be exerted through conventional ground operations.

D. It is important to fix responsibility for targeting for the following reasons:

1. To assure initiative in the analysis of intelligence information for the purpose of identifying targets.
2. To allocate assets to the task of target identification in a rational manner.
3. To provide an advocate at the staff level to represent a strategic battlefield campaign when deciding upon the allocation of strike forces.
4. To develop technical expertise and doctrine for the execution of an important and complex mission.

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E. Not only is it necessary to fix the responsibility for targeting, but it is also necessary to have a specialized organization carry out this function for the following reasons:

1. To provide for the necessary technical expertise and technical equipment required in the conduct of analysis leading to target identification.
2. To minimize friction between the collection, processing, and analytical phases of the cycle which results in target identification.
3. To reduce the time involved in target identification to an absolute minimum to make it possible for the techniques to be employed against enemy forces that may move from their present location with no prior warning.